

Attachment A to Resolution No. R13-010

Proposed Amendment to the Water Quality Control Plan – Los Angeles Region to incorporate the Ballona Creek Metals TMDL

Proposed for adoption by the California Regional Water Quality Control Board, Los Angeles Region on December 5, 2013.

Amendments:

Chapter 7. Total Maximum Daily Loads (TMDLs) Summaries, Section 7-12 (Ballona Creek Metals TMDL)

This TMDL was adopted by the Regional Water Quality Control Board on September 6, 2007.

This TMDL was approved by:

The State Water Resources Control Board on June 17, 2008.

The Office of Administrative Law on October 6, 2008.

The U.S. Environmental Protection Agency on October 29, 2008.

This TMDL was revised by:

The Regional Water Quality Control Board on December 5, 2013.

This revised TMDL was approved by:

The State Water Resources Control Board on June 17, 2014.

The Office of Administrative Law on May 05, 2015.

The U.S. Environmental Protection Agency on October 26, 2015.

The following tables include the elements of this TMDL.

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Table 7-12.1. Ballona Creek Metals TMDL: Elements

Element	Key Findings and Regulatory Provisions
<p><i>Problem Statement</i></p>	<p>Ballona Creek is included on the Clean Water Act Section 303(d) list of impaired waterbodies for dissolved copper, dissolved lead, total selenium, dissolved zinc, and toxicity and Sepulveda Canyon Channel is included on the 303(d) list for lead. The metals subject to this TMDL are toxic pollutants, and the existing water quality objectives for the metals reflect national policy that the discharge of toxic pollutants in toxic amounts be prohibited. When one of the metals subject to this TMDL is present at levels exceeding the existing numeric objectives, then the receiving water is considered to be impaired. The following designated beneficial uses in Ballona Creek are impaired by these metals: water contact recreation (REC1); non-contact water recreation (REC2); warm freshwater habitat (WARM); and wildlife habitat (WILD). Ballona Creek Estuary, located immediately downstream of Ballona Creek, has the following designated beneficial uses: water contact recreation (REC1); non-contact water recreation (REC2); warm freshwater habitat (WARM); estuarine habitat (EST); marine habitat (MAR); wildlife habitat (WILD); rare and threatened or endangered species (RARE); migration of aquatic organisms (MIGR); reproduction and early development of fish (SPWN); commercial and sport fishing (COMM); and shellfish harvesting (SHELL).</p> <p>Recent data indicate that selenium is not present at levels exceeding existing numeric targets and is not impairing the designated beneficial uses. Therefore, a TMDL for selenium is not included.</p> <p>TMDLs are developed for reaches on the 303(d) list and metal allocations are developed for tributaries that drain to impaired reaches. This TMDL addresses dry- and wet-weather discharges of copper, lead, and zinc in Ballona Creek and Sepulveda Canyon Channel.</p>
<p><i>Numeric Target</i> <i>(Interpretation of the narrative and numeric water quality objective, used to calculate the load allocations)</i></p>	<p>Numeric water quality targets are based on the numeric water quality criteria established for metals by the California Toxics Rule (CTR). The targets are expressed in terms of total recoverable metals. There are separate numeric targets for dry and wet weather because hardness values and flow conditions in Ballona Creek and Sepulveda Canyon Channel vary between dry and wet weather. The dry-weather targets apply to days when the maximum daily flow in Ballona Creek is less than 64 cubic feet per second (cfs). The wet-weather targets apply to days when the maximum daily flow in Ballona Creek is equal to or greater than 64 cfs.</p> <p>Dry Weather</p> <p>The dry-weather targets for copper, lead, and zinc are based on the chronic CTR criteria and the 50th percentile hardness value of 396 mg/L for dry-weather flow collected at Sawtelle Boulevard. Conversion factors for copper, lead, and zinc are based on the dry-weather, 90th percentile ratio of the dissolved metals value to total recoverable metals value collected at Sawtelle. Dry-weather targets are also dependent on water effects ratios (WER), which have a default value of 1.0 unless a</p>

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	<p>site-specific water effects ratio are approved.</p> <p style="text-align: center;"><u>Dry-weather numeric targets (µg total recoverable metals/L)</u></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;">Dissolved</th> <th style="text-align: center;">Conversion Factor</th> <th style="text-align: center;">Total Recoverable</th> </tr> </thead> <tbody> <tr> <td>Copper</td> <td style="text-align: center;">29.03*WER¹</td> <td style="text-align: center;">0.816</td> <td style="text-align: center;">35.56*WER¹</td> </tr> <tr> <td>Lead</td> <td style="text-align: center;">10.83*WER¹</td> <td style="text-align: center;">0.551</td> <td style="text-align: center;">19.65*WER¹</td> </tr> <tr> <td>Zinc</td> <td style="text-align: center;">379.16*WER¹</td> <td style="text-align: center;">0.849</td> <td style="text-align: center;">446.55*WER¹</td> </tr> </tbody> </table> <p>Wet Weather</p> <p>The wet-weather targets for copper, lead and zinc are based on the acute CTR criteria and the 50th percentile hardness value of 82 mg/L for storm water, defined as days when the maximum daily flow in Ballona Creek is equal to or greater than 64 cfs collected at Sawtelle Boulevard. Conversion factors for copper, lead, and zinc are based on the wet-weather, 90th percentile of the dissolved metal values to total recoverable metal values collected at Sawtelle Boulevard. Wet-weather targets are also dependent on water effects ratios, which have a default value of 1.0 unless a site-specific water effects ratio are approved.</p> <p style="text-align: center;"><u>Wet-weather numeric targets (µg total recoverable metals/L)</u></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;">Dissolved</th> <th style="text-align: center;">Conversion Factor</th> <th style="text-align: center;">Total Recoverable</th> </tr> </thead> <tbody> <tr> <td>Copper</td> <td style="text-align: center;">11.14*WER¹</td> <td style="text-align: center;">0.814</td> <td style="text-align: center;">13.70*WER¹</td> </tr> <tr> <td>Lead</td> <td style="text-align: center;">52.00*WER¹</td> <td style="text-align: center;">0.677</td> <td style="text-align: center;">76.75*WER¹</td> </tr> <tr> <td>Zinc</td> <td style="text-align: center;">99.04*WER¹</td> <td style="text-align: center;">0.945</td> <td style="text-align: center;">104.77*WER¹</td> </tr> </tbody> </table>		Dissolved	Conversion Factor	Total Recoverable	Copper	29.03*WER ¹	0.816	35.56*WER ¹	Lead	10.83*WER ¹	0.551	19.65*WER ¹	Zinc	379.16*WER ¹	0.849	446.55*WER ¹		Dissolved	Conversion Factor	Total Recoverable	Copper	11.14*WER ¹	0.814	13.70*WER ¹	Lead	52.00*WER ¹	0.677	76.75*WER ¹	Zinc	99.04*WER ¹	0.945	104.77*WER ¹
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Source Analysis	<p>There are significant differences in the sources of copper, lead, and zinc loadings during dry weather and wet weather. During dry weather, most of the metals loadings are in the dissolved form. Storm drains convey a large percentage of the metals loadings during dry weather because although their flows are typically low, concentrations of metals in urban runoff may be quite high. During dry years, dry-weather loadings account for 25-35% of the annual metals loadings. Additional sources of dry weather flow and metals loading include groundwater discharge and flows from other permitted NPDES discharges within the watershed.</p> <p>During wet weather, most of the metals loadings in Ballona Creek are in the particulate form and are associated with wet-weather storm water flows. On an annual basis, storm water contributes about 91% of the copper loading and 92% of the lead loading to Ballona Creek. Storm water flow is permitted through the municipal separate storm sewer system (MS4) permit issued to the County of Los Angeles, a separate</p>																																

¹ The water quality targets for metals in the TMDL are expressed as the water quality criteria from the federal California Toxics Rule (CTR) at 40 CFR §131.38. Those criteria include a numerical threshold multiplied by a water-effect ratio (WER). The WER has a default value of 1.0 unless a site-specific WER is approved. To use a WER other than the default of 1.0, a study must be conducted consistent with USEPA's WER derivation methodology. If the Regional Board approves site-specific WERs in these waterbodies, the TMDL targets will be modified in accordance with all legal and regulatory requirements, adopted by the Regional Board through the state's basin plan amendment process and implemented in accordance with the approved WERs using the equations set forth above.

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	<p>Caltrans storm water permit, a general construction storm water permit, and a general industrial storm water permit.</p> <p>Non-point sources are not considered to be a significant source in this TMDL. Direct atmospheric deposition of metals is insignificant relative to the annual dry-weather loading or the total annual loading. Indirect atmospheric deposition reflects the process by which metals deposited on the land surface may be washed off during storm events and delivered to Ballona Creek and its tributaries. The loading of metals associated with indirect atmospheric deposition is accounted for in the estimates of the storm water loading.</p>																				
<i>Loading Capacity</i>	<p>TMDLs are developed for copper, lead, and zinc for Ballona Creek and Sepulveda Canyon Channel and are based on the numeric targets, which may be modified by a site-specific WER as described above in “Numeric Targets”.</p> <p>Dry Weather</p> <p>Dry-weather loading capacities for Ballona Creek and Sepulveda Canyon Channel are equal to the dry-weather numeric targets multiplied by the critical dry-weather flow for each waterbody. Based on long-term flow records for Ballona Creek at Sawtelle Boulevard the median dry-weather flow is 17 cfs. The median dry-weather flow for Sepulveda Canyon Channel, based on measurements conducted in 2003, is 6.3 cfs.</p> <p><u>Dry-weather loading capacity (grams total recoverable metals/day)</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">Copper</th> <th style="text-align: center;">Lead</th> <th style="text-align: center;">Zinc</th> </tr> </thead> <tbody> <tr> <td>Ballona Creek</td> <td style="text-align: center;">1,479.2</td> <td style="text-align: center;">817.2</td> <td style="text-align: center;">18,573.1</td> </tr> <tr> <td>Sepulveda Channel</td> <td style="text-align: center;">548.2</td> <td style="text-align: center;">302.9</td> <td style="text-align: center;">6,883.0</td> </tr> </tbody> </table> <p>Wet Weather</p> <p>Wet-weather loading capacities are calculated by multiplying the daily storm volume by the wet-weather numeric target for each metal.</p> <p><u>Wet-weather loading capacity (grams total recoverable metals/day)</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Metal</u></th> <th style="text-align: left;"><u>Load Capacity</u></th> </tr> </thead> <tbody> <tr> <td>Copper</td> <td>Daily storm volume x 13.7 µg/L</td> </tr> <tr> <td>Lead</td> <td>Daily storm volume x 76.75 µg/L</td> </tr> <tr> <td>Zinc</td> <td>Daily storm volume x 104.77 µg/L</td> </tr> </tbody> </table>		Copper	Lead	Zinc	Ballona Creek	1,479.2	817.2	18,573.1	Sepulveda Channel	548.2	302.9	6,883.0	<u>Metal</u>	<u>Load Capacity</u>	Copper	Daily storm volume x 13.7 µg/L	Lead	Daily storm volume x 76.75 µg/L	Zinc	Daily storm volume x 104.77 µg/L
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<i>Load Allocations (for nonpoint sources)</i>	<p>Load allocations (LA) are assigned to non-point sources for Ballona Creek and Sepulveda Canyon Channel and are based on the numeric targets, which may be modified by a site-specific WER as described above in “Numeric Targets”.</p> <p>Dry Weather</p> <p>Dry-weather load allocations for copper, lead and zinc are developed</p>																				

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	<p>for direct atmospheric deposition. The mass-based load allocations are equal to the ratio of the length of each segment over the total length multiplied by the estimates of direct atmospheric loading for Ballona Creek (3.5 g/day for copper, 2.3 g/day for lead, and 11.7 k/day for zinc).</p> <p><u>Dry-weather direct air deposition LAs (total recoverable metals)</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="border-top: 1px solid black; border-bottom: 1px solid black;"></th> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Copper (g/day)</th> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Lead (g/day)</th> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Zinc (g/day)</th> </tr> </thead> <tbody> <tr> <td>Ballona Creek</td> <td>2.0</td> <td>1.4</td> <td>6.8</td> </tr> <tr> <td>Sepulveda Channel</td> <td>0.3</td> <td>0.2</td> <td>0.9</td> </tr> </tbody> </table> <p>Wet Weather</p> <p>Wet-weather load allocations for copper, lead, and zinc are developed for direct atmospheric deposition. The mass-based load allocations for direct atmospheric deposition are equal to the percent area of surface water (0.6%) multiplied by the total loading capacity.</p> <p><u>Wet-weather direct air deposition LAs (total recoverable metals)</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="border-top: 1px solid black; border-bottom: 1px solid black;"></th> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Load Allocation (grams/day)</th> </tr> </thead> <tbody> <tr> <td>Copper</td> <td>$8.028 \times 10^{-8} \times \text{Daily storm volume (L)}$</td> </tr> <tr> <td>Lead</td> <td>$4.497 \times 10^{-7} \times \text{Daily storm volume (L)}$</td> </tr> <tr> <td>Zinc</td> <td>$6.139 \times 10^{-7} \times \text{Daily storm volume (L)}$</td> </tr> </tbody> </table>		Copper (g/day)	Lead (g/day)	Zinc (g/day)	Ballona Creek	2.0	1.4	6.8	Sepulveda Channel	0.3	0.2	0.9		Load Allocation (grams/day)	Copper	$8.028 \times 10^{-8} \times \text{Daily storm volume (L)}$	Lead	$4.497 \times 10^{-7} \times \text{Daily storm volume (L)}$	Zinc	$6.139 \times 10^{-7} \times \text{Daily storm volume (L)}$
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<i>Waste Load Allocations (for point sources)</i>	<p>Waste load allocations (WLA) are assigned to point sources for Ballona Creek and Sepulveda Canyon Channel. These WLAs are based on the numeric targets, which may be modified by a site-specific WER as described above in “Numeric Targets”. A mass-based waste load allocation is developed for the storm water permittee groups (Los Angeles County MS4, Caltrans, General Construction and General Industrial) by subtracting the load allocation from the total loading capacity. Concentration-based waste load allocations are developed for other point sources in the watershed.</p> <p>Dry Weather</p> <p>Dry-weather waste load allocation for storm water is equal to the respective dry-weather critical flow multiplied by the dry-weather numeric target minus the load allocation for direct atmospheric deposition.</p> <p style="text-align: center;"><u>Dry-weather Storm Water WLAs (grams total recoverable metals/day)</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="border-top: 1px solid black; border-bottom: 1px solid black;"></th> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Copper</th> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Lead</th> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Zinc</th> </tr> </thead> <tbody> <tr> <td>Ballona Creek</td> <td>1,477.2</td> <td>815.9</td> <td>18,566.3</td> </tr> <tr> <td>Sepulveda Channel</td> <td>547.9</td> <td>302.7</td> <td>6,882.0</td> </tr> </tbody> </table> <p>A waste load allocation of zero is assigned to all general construction and industrial storm water permits during dry weather. Therefore, the storm water waste load allocations are apportioned between the MS4</p>		Copper	Lead	Zinc	Ballona Creek	1,477.2	815.9	18,566.3	Sepulveda Channel	547.9	302.7	6,882.0								
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Margin of Safety	<p>There is an implicit margin of safety through the use of the 90th percentile conservative values for the conversion factors from total recoverable metals to the dissolved fraction during dry and wet-weather. In addition, the TMDL includes a margin of safety by evaluating dry-weather and wet-weather conditions separately and assigning allocations based on these two different critical conditions.</p>																												
Implementation	<p>The regulatory mechanisms used to implement the TMDL will include the Los Angeles County Municipal Storm Water NPDES Permit (MS4), the State of California Department of Transportation (Caltrans) Storm Water Permit, minor NPDES permits, general NPDES permits, general industrial storm water NPDES permits, and general construction storm water NPDES permits. Nonpoint sources will be regulated through the authority contained in Sections 13263 and 13269</p>																												

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	<p>of the Water Code, in conformance with the State Water Resources Control Board’s Nonpoint Source Implementation and Enforcement Policy (May 2004). Each NPDES permit assigned a WLA shall be reopened or amended at re-issuance, in accordance with applicable laws, to incorporate the applicable WLAs as a permit requirement.</p> <p>Table 7-12.2 presents the implementation schedule for the responsible permittees.</p> <p>Minor NPDES Permits and General Non-Storm Water NPDES Permits:</p> <p>The concentration-based waste load allocations for the minor NPDES permits and general non-storm water NPDES permits will be implemented as NPDES permit limits. Permit writers may translate applicable waste load allocations into effluent limits for the minor and general NPDES permits by applying the effluent limitation procedures in Section 1.4 of the State Water Resources Control Board’s Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (2005) or applying other appropriate methodologies authorized under federal regulations. The minor and general non-storm water NPDES permittees may be allowed up to January 11, 2016 to achieve the waste load allocations. A discharger that can not comply immediately with effluent limitations specified to meet waste load allocations will be required to apply for an individual permit, in order to demonstrate the need for a compliance schedule.</p> <p>Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to January 11, 2016 to achieve compliance with final WLAs.</p> <p>General Industrial Storm Water Permits: <u>Dry-weather Implementation</u></p> <p>Non-storm water flows authorized by Order No. 97-03 DWQ, or any successor order, are exempt from the dry-weather waste load allocation equal to zero. Instead, these authorized non-storm water flows shall meet the concentration-based waste load allocations assigned to the other NPDES Permits. The dry-weather waste load allocation equal to zero applies to unauthorized non-storm water flows, which are prohibited by Order No. 97-03 DWQ.</p> <p>It is anticipated that the dry-weather waste load allocations will be implemented by requiring improved best management practices (BMPs) to eliminate the discharge of unauthorized non-storm water flows or adequately control the discharge of authorized non-storm water to achieve the concentration-based waste load allocations. However, the permit writers must provide adequate justification and</p>

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	<p>documentation to demonstrate that specified BMPs are expected to result in attainment of the numeric waste load allocations.</p> <p><u>Wet-weather Implementation</u></p> <p>The general industrial storm water permittees are allowed interim wet-weather concentration-based waste load allocations based on benchmarks contained in EPA’s Storm Water Multi-sector General Permit for Industrial Activities. The interim waste load allocations apply to all industry sectors until no later than January 11, 2016.</p> <p><u>Interim Wet-Weather WLAs for General Industrial Storm Water Permittees (total recoverable metals)</u></p> <table style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Copper (µg/L)</th> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Lead (µg/L)</th> <th style="border-top: 1px solid black; border-bottom: 1px solid black;">Zinc (µg/L)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">63.6</td> <td style="text-align: center;">81.6</td> <td style="text-align: center;">117</td> </tr> </tbody> </table> <p>The general industrial storm water permittees shall achieve final wet-weather waste load allocations no later than January 11, 2016, which shall be expressed as NPDES water quality-based effluent limitations (WQBELs). Permittees may demonstrate compliance with WQBELs in one of two ways.</p> <p>First, general industrial and construction storm water permittees may be deemed in compliance with permit limitations if they demonstrate that there are no exceedances of the permit limitations at their discharge points or outfalls.</p> <p>Second, if permittees provide a quantitative demonstration that control measures and best management practices (BMPs) will achieve WQBELs consistent with the schedule in Table 7-12.2, then compliance may be demonstrated by implementation of those control measures and BMPs, subject to Executive Officer approval.</p> <p>General Construction Storm Water Permits:</p> <p><u>Dry-weather Implementation</u></p> <p>Non-storm water flows authorized by the General Permit for Storm Water Discharges Associated with Construction Activity (Water Quality Order No. 2009-0009 DWQ), or any successor order, are exempt from the dry-weather waste load allocation equal to zero as long as they are authorized non-storm discharges and are (1) infeasible to eliminate (2) comply with BMPs as described in the Storm Water Pollution Prevention Plan prepared by the permittee, and (3) do not cause or contribute to a violation of water quality standards, or comparable provisions in any successor order. Unauthorized non-storm water flows are already prohibited by Order No. 2009-0009 DWQ.</p> <p><u>Wet-weather Implementation</u></p> <p>The general construction storm water permits shall achieve final wet-</p>	Copper (µg/L)	Lead (µg/L)	Zinc (µg/L)	63.6	81.6	117
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	<p>weather waste load allocations no later than January 11, 2016, which shall be expressed as NPDES water quality-based effluent limitations (WQBELs).</p> <p>Permittees may demonstrate compliance with WQBELs in one of two ways.</p> <p>First, general industrial and construction storm water permittees may be deemed in compliance with permit limitations if they demonstrate that there are no exceedances of the permit limitations at their discharge points or outfalls.</p> <p>Second, if permittees provide a quantitative demonstration that control measures and best management practices (BMPs) will achieve WQBELs consistent with the schedule in Table 7-12.2, then compliance may be demonstrated by implementation of those control measures and BMPs, subject to Executive Officer approval.</p> <p>MS4 and Caltrans Storm Water Permits:</p> <p>The County of Los Angeles, Los Angeles County Flood Control District, City of Los Angeles, Beverly Hills, Culver City, Inglewood, Santa Monica, and West Hollywood are jointly responsible for meeting the mass-based waste load allocations for the MS4 permittees. Caltrans is responsible for meeting its mass-based waste load allocations, however, it may choose to work with the MS4 permittees.</p> <p>Applicable CTR limits are being met most of the time during dry weather, with episodic exceedances. Due to the expense of obtaining accurate flow measurements required for calculating loads, concentration-based permit limits may apply during dry weather. These concentration-based limits would be equal to the dry-weather concentration-based waste load allocations assigned to the other NPDES permits.</p> <p>Each municipality and permittee will be required to meet the storm water waste load allocation. If permittees provide a quantitative demonstration as part of a watershed management program plan that control measures and BMPs will achieve wet-weather WLAs consistent with the schedule in Table 7-14.2, then compliance with wet-weather WQBELs may be demonstrated by implementation of those control measures and BMPs, subject to Executive Officer approval. A phased implementation approach, using a combination of non-structural and structural BMPs may be used to achieve compliance with the stormwater waste load allocations. The administrative record and the fact sheets for the MS4 and Caltrans storm water permits must provide reasonable assurance that the BMPs selected will be sufficient to implement the waste load allocations. Alternatively, permittees may be deemed in compliance with WQBELs if they demonstrate compliance with dissolved numeric targets in dry and wet-weather in the applicable</p>

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	<p>receiving water.</p> <p>The implementation schedule for the MS4 and Caltrans permittees consists of a phased approach, with compliance to be achieved in prescribed percentages of the watershed or as a reduction from baseline loading, with total compliance to be achieved by January 11, 2021. Baseline loading is defined as loading estimated when the TMDL was developed in 2005.</p>
<p><i>Seasonal Variations and Critical Conditions</i></p>	<p>Seasonal variations are addressed by developing separate waste load allocations for dry weather and wet weather.</p> <p>Based on long-term flow records, median dry-weather flows in Ballona Creek are estimated to be 17 cubic feet per second (cfs). Since, this flow has been very consistent, 17 cfs is used to define the critical dry-weather flow for Ballona Creek at Sawtelle Boulevard (upstream of Sepulveda Canyon Channel). There are no historic flow records to determine the average long-term flows for Sepulveda Canyon Channel. Therefore, in the absence of historical records the 2003 dry-weather characterization study measurements are assumed reasonable estimates of flow for this channel. The critical dry-weather flow for Sepulveda Canyon Channel is defined as the average flow of 6.3 cfs.</p> <p>Wet-weather allocations are developed using the load-duration curve concept. The total wet-weather waste load allocation varies by storm, therefore, given this variability in storm water flows, no justification was found for selecting a particular sized storm as the critical condition.</p>
<p><i>Monitoring</i></p>	<p>Effective monitoring will be required to assess the condition of the Ballona Creek and to assess attainment of WLAs and LAs by dischargers and responsible parties to reduce metals loading to Ballona Creek. Special studies may also be appropriate to provide further information about new data, new or alternative sources, and revised scientific assumptions. Below the Regional Board identifies the various goals of monitoring efforts and studies that shall be included in subsequent permits or other orders.</p> <p>TMDL Effectiveness Monitoring</p> <p>The MS4 and Caltrans storm water NPDES permittees are jointly responsible for assessing the progress in reducing pollutant loads to achieve the TMDL. The MS4 and Caltrans storm water NPDES permittees are required to submit for approval of the Executive Officer a coordinated monitoring plan that will demonstrate the effectiveness of the phased implementation schedule for this TMDL, which requires attainment of the applicable waste load allocations in prescribed percentages of the watershed over a 15-year period or as a reduction from baseline load.</p> <p>The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting the dry-weather waste load allocations if the in-</p>

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	<p>stream pollutant concentrations or load at the first downstream monitoring location is equal to or less than the corresponding concentration- or load-based waste load allocation. Alternatively, effectiveness of the TMDL may be assessed at the storm drain outlet based on the concentration-based waste load allocation for the receiving water. For storm drains that discharge to other storm drains, the waste load allocation will be based on the waste load allocation for the ultimate receiving water for that storm drain system.</p> <p>The MS4 and Caltrans storm water NPDES permittees will be found to be effectively meeting the wet-weather waste load allocations if the loading at the most downstream monitoring location is equal to or less than the wet-weather waste load allocation. Compliance with individual general construction and industrial storm water permittees will be based on monitoring of discharges at the property boundary. Compliance may be assessed based on concentration and/or load allocations.</p> <p>Receiving water quality samples shall also be collected in accordance with an approved coordinated monitoring plan or integrated monitoring program or coordinated integrated monitoring program under the Los Angeles County MS4 permit and analyzed for water column toxicity and copper, lead, zinc, and selenium in the total recoverable and dissolved fraction.</p> <p>Special studies</p> <p>The implementation schedule, Table 7-12.2, allows time for special studies that may serve to refine the estimate of loading capacity, waste load and/or load allocations, and other studies that may serve to optimize implementation efforts. Studies may include:</p> <ul style="list-style-type: none"> • Refinement of hydrologic and water quality model • Additional source assessment including studies which would determine the proportion of copper coming from brake pads and/or contributions of reductions in copper from brake pads to the reduction of copper in stormwater • Refinement of potency factors correlation between total suspended solids and metals loadings during dry and wet weather • Correlation between short-term rainfall intensity and metals loadings for use in sizing in-line structural BMPs • Correlation between storm volume and total recoverable metals loading for use in sizing storm water retention facilities • Refined estimates of metals partitioning coefficients, conversion factors, and site-specific toxicity. • Evaluation of potential contribution of aerial deposition and sources of aerial deposition.

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Table 7-12.2. Ballona Creek Metals TMDL: Implementation Schedule

Date	Action
January 11, 2006	Regional Board permit writers shall incorporate the waste load allocations into the NPDES permits. Waste load allocations will be implemented through NPDES permit limits in accordance with the implementation schedule contained herein, at the time of permit issuance or re-issuance.
January 11, 2010	Responsible jurisdictions and agencies shall provide to the Regional Board results of the special studies.
January 11, 2011	The Regional Board shall reconsider this TMDL to re-evaluate the waste load allocations and the implementation schedule.
MINOR NPDES PERMITS AND GENERAL NON-STORM WATER NPDES PERMITS	
Upon permit issuance or renewal	<p>The non-storm water NPDES permittees shall achieve the waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. The minor and general non-storm water NPDES permittees are allowed up to January 11, 2016 to achieve the waste load allocations.</p> <p>Permittees that hold individual NPDES permits and solely discharge storm water may be allowed (at Regional Board discretion) compliance schedules up to January 11, 2016 to achieve compliance with final WLAs.</p>
GENERAL INDUSTRIAL STORM WATER PERMITS	
Upon permit issuance or renewal	The general industrial storm water NPDES permittees shall achieve dry-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin to install and test BMPs to meet the interim wet-weather WLAs. BMP effectiveness monitoring will be implemented to determine progress in achieving interim wet-weather waste load allocations.
January 11, 2011	The general industrial storm water NPDES permittees shall achieve the interim wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs. Permittees shall begin an iterative BMP process

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Date	Action
	including BMP effectiveness monitoring to achieve compliance with final wet-weather WLAs.
January 11, 2016	The general industrial storm water NPDES permittees shall achieve the final wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
GENERAL CONSTRUCTION STORM WATER PERMITS	
Upon permit issuance, renewal, or re-opener	Non-storm water flows not authorized by Order No. 99-08 DWQ, or any successor order, shall achieve dry-weather waste load allocations of zero. Waste load allocations shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
January 11, 2013	The construction industry will submit the results of wet-weather BMP effectiveness studies to the Regional Board for consideration. In the event that no effectiveness studies are conducted and no BMPs are approved, permittees shall be subject to site-specific BMPs and monitoring to demonstrate BMP effectiveness.
January 11, 2014	The Regional Board will consider results of the wet-weather BMP effectiveness studies and consider approval of BMPs.
January 11, 2015	The general industrial storm water NPDES permittees shall achieve the final wet-weather waste load allocations, which shall be expressed as NPDES water quality-based effluent limitations specified in accordance with federal regulations and state policy on water quality control. Effluent limitations may be expressed as permit conditions, such as the installation, maintenance, and monitoring of Regional Board-approved BMPs.
MS4 AND CALTRANS STORM WATER PERMITS	
January 11, 2007	In response to an order issued by the Executive Officer, the MS4 and Caltrans storm water NPDES permittees must submit a coordinated monitoring plan, to be approved by the Executive Officer.

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June 11, 2015	Submit a revised coordinated monitoring plan or the Integrated Monitoring Program or Coordinated Integrated Monitoring Program prepared in compliance with the Los Angeles County MS4 permit.
January 11, 2010 (Draft Report) July 11, 2010 (Final Report)	MS4 and Caltrans storm water NPDES permittees shall provide a written report to the Regional Board outlining the drainage areas to be address and how these areas will achieve compliance with the waste load allocations. The report shall include implementation methods, an implementation schedule, proposed milestones, and any applicable revisions to the TMDL effectiveness monitoring plan.
January 11, 2012	<p>Compliance with the TMDL may be demonstrated in either one of two ways:</p> <ol style="list-style-type: none"> 1. The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 50% of the total drainage area served by the MS4 is effectively meeting the dry-weather waste load allocations and 25% of the total drainage area served by the MS4 is effectively meeting the wet-weather waste load allocations. 2. Alternatively, permittees shall attain a 50% reduction in dry-weather and 25% reduction in wet-weather in the difference between the baseline loadings and WLAs, as measured at the relevant existing MS4 permit monitoring location and/or at relevant MS4 monitoring stations identified in an approved coordinated monitoring plan.
January 11, 2014	<p>Compliance with the TMDL may be demonstrated in either one of two ways:</p> <ol style="list-style-type: none"> 1. The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 75% of the total drainage area served by the MS4 is effectively meeting the dry-weather waste load allocations. 2. Alternatively, permittees shall attain a 75% reduction in the difference between the baseline loadings and WLAs, as measured at the relevant existing MS4 permit monitoring location and/or at relevant MS4 monitoring stations identified in an approved coordinated monitoring plan.

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January 11, 2016	<p>Compliance with the TMDL may be demonstrated in either one of two ways:</p> <ol style="list-style-type: none"> 1. The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 is effectively meeting the dry-weather waste load allocations and 50% of the total drainage area served by the MS4 is effectively meeting the wet-weather waste load allocations. 2. Alternatively, permittees shall attain a 100% reduction in dry-weather and 50% reduction in wet-weather in the difference between the baseline loadings and WLAs, as measured at the relevant existing MS4 permit monitoring location and/or at relevant MS4 monitoring stations identified in an approved coordinated monitoring plan.
January 11, 2021	<p>Compliance with the TMDL may be demonstrated in either one of two ways:</p> <ol style="list-style-type: none"> 1. The MS4 and Caltrans storm water NPDES permittees shall demonstrate that 100% of the total drainage area served by the MS4 is effectively meeting both the dry-weather and wet-weather waste load allocations. 2. Alternatively, permittees shall attain a 100% reduction of both dry and wet-weather in the difference between the baseline loadings and WLAs, as measured at the relevant existing MS4 permit monitoring location and/or at relevant MS4 monitoring stations identified in an approved coordinated monitoring plan.